

Appendix D. Data Quality

Imputation procedures. Two principal determinants of the quality of data collected in household surveys are the magnitude of the imputed responses and the accuracy of the responses that are provided. This appendix provides information on the imputation rates for selected child care items in the Survey of Income and Program Participation. The Fall 1988 data include the combined 1987 Wave 6 and 1988 Wave 3 panels conducted from October 1988 to January 1989, referring to child care arrangements used in the month prior to the survey.

Imputed responses refer either to missing responses for specific questions or "items" in the questionnaire or to responses that were rejected in the editing procedure because of improbable or inconsistent responses. An example of the latter is when a 14 year old child is said to be cared for in a nursery school during the time his or her parent is at work.

The estimates shown in this report are produced after all items have been edited and imputed whenever necessary. Missing or inconsistent responses to specific items are assigned a value in the imputation phase of the data processing operation. The procedure used to assign or impute most responses for missing or inconsistent data for the SIPP is commonly referred to as the "hot deck" imputation method. The process assigns item values reported in the survey by respondents to nonrespondents. The respondent from whom the value is taken is called the "donor." Values from donors are assigned by controlling edited demographic and labor force data available for both donors and nonrespondents. The control variables used for child care items generally included the age of the child for whom there was missing data, the parent's marital status, and whether the parent was employed full or part time, looking for work or attending school.

Item nonresponses. Imputation rates for both primary and secondary child care arrangements (items 3a and 4a in the questionnaire shown in appendix E) for the respondents' three youngest children are shown in table D-1. The imputation rates are calculated by dividing the number of missing or inconsistent responses by the total number of responses that should have been provided based on the number of children in the household who required child care responses. In general, the level of imputation for primary child care arrangements for employed women in the SIPP panels in this report

averaged about 7 percent. Lower imputation rates were found for secondary arrangements (about 3 percent).

Table D-2 shows imputation rates for selected items concerning cash payments made for child care arrangements and the number of hours per week used for child care arrangements. About 10 percent of the responses concerning whether a cash payment was made for the child's primary child care arrangement were imputed; another 4 percent failed to answer the question if any cash payment was made for secondary child care services. For those who were determined to have made a cash payment, about 13 percent failed to report on the amount of the payment for the primary arrangement while 9 percent failed to report the cash amount for the secondary arrangement.

Imputation rates for cash payment items were higher in this survey than in previous years because more detail on cash payments were asked in Fall 1988. In previous SIPP child care modules, only one question was asked on total cash payments for all children and for all arrangements. While information in 1988 was obtained in more detail and greatly enhanced the value of the data set, nonresponse rates increased because more specific knowledge was required of the respondent.

Additional difficulties in data collection existed in 1988 that were not present in prior years. In cases where two or more children shared the same arrangement and when only one payment was made for the arrangement, respondents were asked to indicate which children shared arrangements and the total cost for the shared arrangement. Approximately 11 percent of the respondents failed to indicate if the primary arrangements were shared and another 8 percent failed to indicate if the secondary arrangements were shared. Hence, an additional degree of uncertainty was added to procedure which ultimately derived the total cost of all arrangements.

Hours spent in child care. Approximately 13 to 14 percent of respondents in the survey had their responses imputed on the number of hours their children spent each week in child care. Hours that the child spent commuting to school or to the arrangement were not counted as part of the arrangement for several reasons. First, travel time on a bus is clearly not equivalent to time spent under a provider's supervision. Researchers

attempting to estimate the time children spend in day care centers or nursery schools would not want to include supervision by a bus driver in their estimates. Secondly, since child care costs per hour were computed in this report, adding unpaid travel time to the arrangement time would clearly bias the hourly child care costs downward.

Table D-1. Imputation Rates for Primary and Secondary Child Care Arrangements for Children Under 15 Years: Fall 1988

(Data represent actual numbers of arrangements mentioned in the survey. Data are shown for arrangements for all children under 15 years of parents in the labor force or in school)

Type of arrangement	Primary arrangement ¹			Secondary arrangement ²		
	Total	Number imputed	Percent imputed	Total	Number imputed	Percent imputed
Total	8,457	594	7.0	2,680	86	3.2
Child's other parent/stepparent	856	50	5.8	445	5	1.1
Child's brother/sister ..	122	7	5.7	195	9	4.6
Child's grandparent ..	566	50	8.8	438	23	5.3
Other relative of child ..	221	13	5.9	154	3	1.9
Nonrelative of child ..	942	70	7.4	593	18	3.0
Day/group care center	514	36	7.0	202	5	2.5
Nursery/preschool ...	274	28	10.2	66	2	3.0
School based activity ..	99	5	5.1	87	7	8.0
Kindergarten/grade school	4,408	299	6.8	129	2	1.6
Child cares for self ...	136	12	8.8	268	10	3.7
Parent works at home	217	15	6.9	57	-	-
Parent cares for child at work ³	99	9	9.1	46	-	4.3
Child not born as of last month	3	-	-	-	-	-

- Represents zero.

¹Item 3a in questionnaire.

²Item 4a in questionnaire.

³Includes parents caring for children while enrolled in school or looking for work.

The reader should also be aware that these estimates probably contain rounding errors resulting from the respondent mentally computing weekly estimates from the additional of daily time estimates which may involve fractional hours. The specificity of the question does not necessarily result in an equivalently accurate estimate. Estimating intervening travel between arrangements, which could involve several different trips over the course of a typical grade-school-age child's day, could involve memory and computational errors large enough to make these estimates less than reliable.

Table D-2. Imputation Rates for Selected Child Care Items: Fall 1988

(Data represent actual numbers of arrangements mentioned in the survey. Data are shown for arrangements for all children under 15 years of parents in the labor force or in school)

Item number	Question	Number of arrangements	Number imputed	Percent imputed
	Any money payment made? ¹			
3c	Primary arrangement	2,616	259	9.9
4c	Secondary arrangement .	1,540	64	4.2
	Is payment shared? ²			
3d	Primary arrangement	1,268	143	11.3
4d	Secondary arrangement	664	51	7.7
	Amount of payment			
3e	Primary arrangement	1,921	249	13.0
4e	Secondary arrangement .	892	82	9.2
	Hours per week in arrangement			
3f	Primary arrangement	8,454	1,109	13.1
4f	Secondary arrangement .	2,680	365	13.6

¹Limited to respondents using grandparents, other relatives, non-relatives, day/group care centers, nursery/preschools, or school-based activities as arrangements.

²Limited to respondents who were parents or guardians of two or more children.